

Basic Definitions

① Electronic Device:- A device made from Semiconductor material

Eg:- Transistors, Diodes, etc-

② Electronic Circuit:- A circuit which consists at least one electronic device as a main component.

(A) Analog Circuit
Eg:- Amplifier, etc

(B) Digital circuits
Eg:- Logic Gates

(C) Mixed signal circuit
Eg:- ADC/DAC

Q) What was the need of digital circuit/electronic?

⇒ Fundamental Significance of Digital Electronic is
Storage.

Smart-phone → RAM
4 GB
6 GB
8 GB



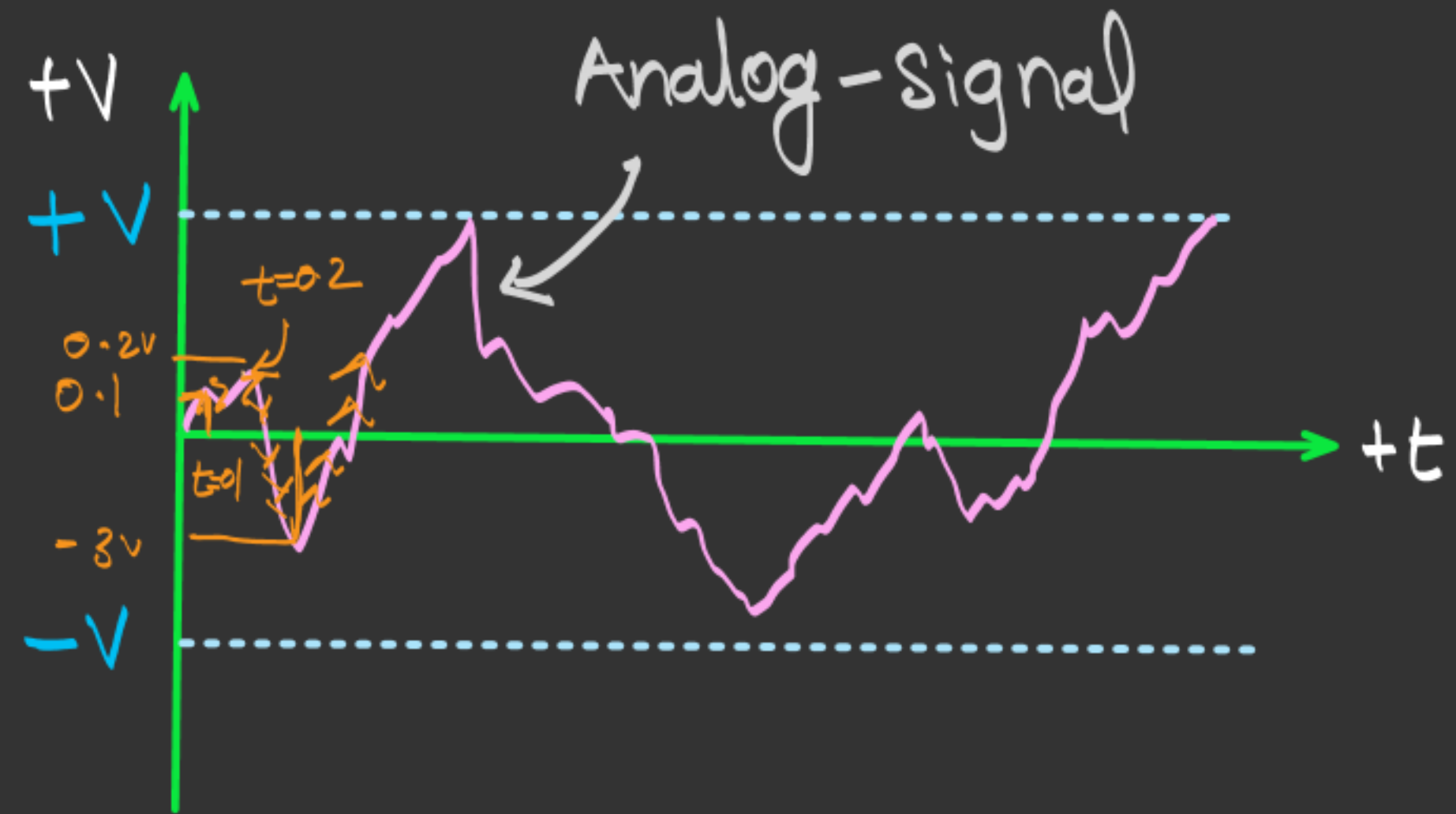
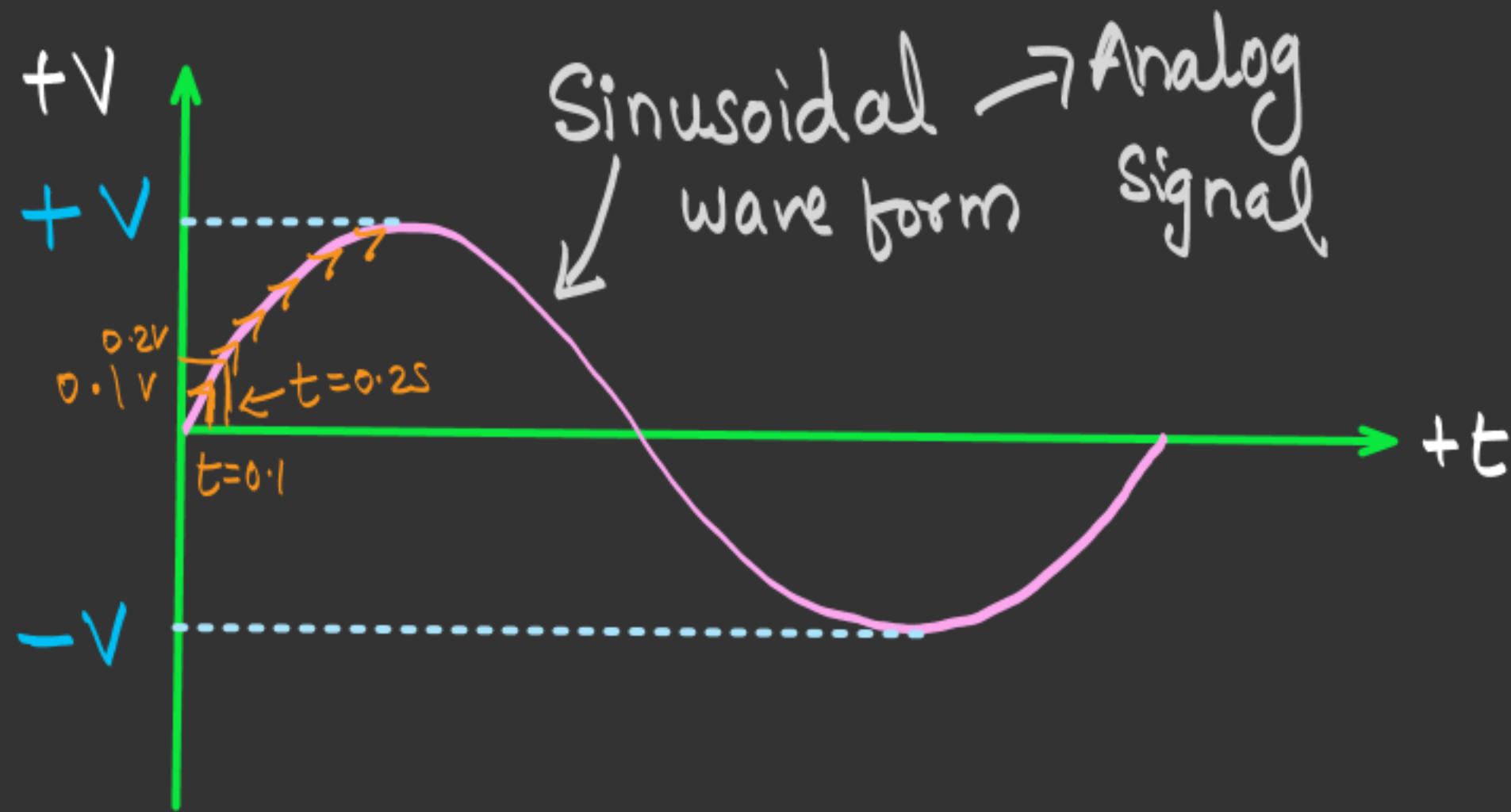
ROM
64 GB
128 GB
256 GB

Stores →
img
videos
doc
text, etc
Storing can
only be
done with the
help of digital electronics

increasing the
Storage

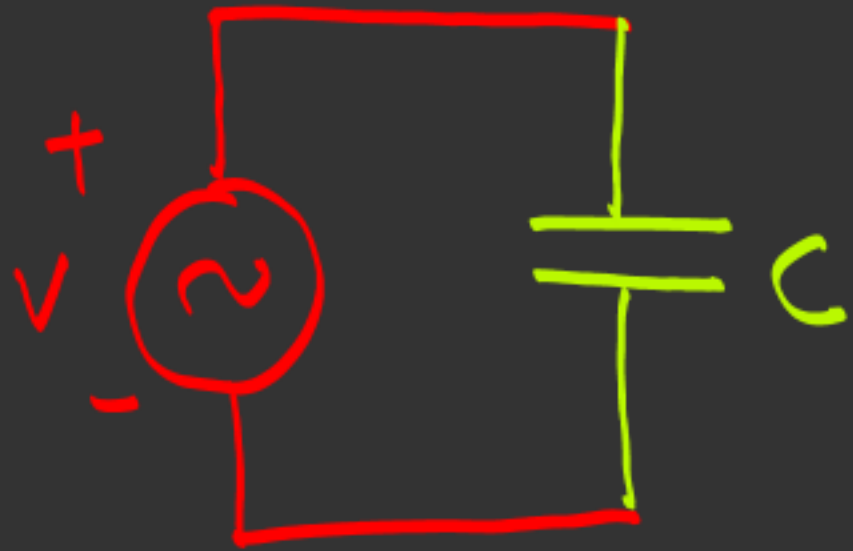
Difference Between Analog and Digital Electronics

@ Analog Electronics



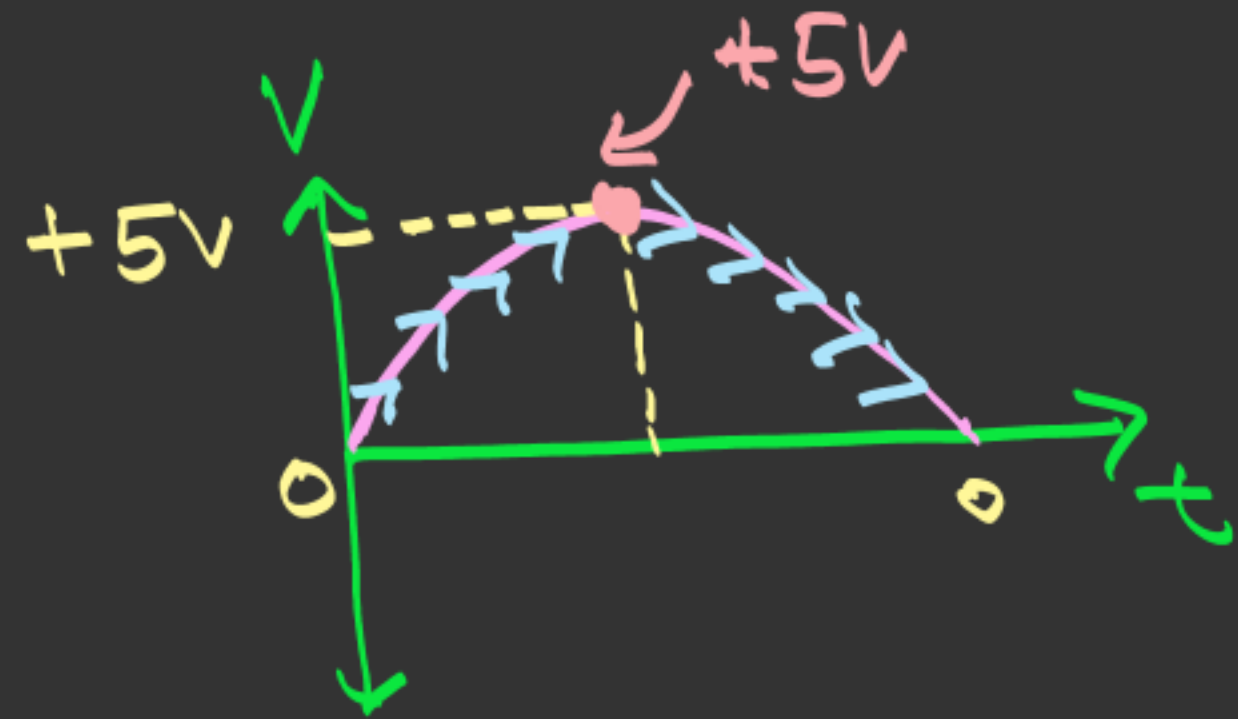
- ① In Analog-Electronics we deal with continuous waveform/ signal i.e. magnitude of the signal changes w.r.t
- ② Analog-Electronic/circuit is used for processing analog-signals.

③ Now, Since the magnitude of the analog-signal is changing w.r.t $\therefore$ we cannot store such signal.



0_v to $5_v \rightarrow$ Capacitor is charging

5_v to $0_v \rightarrow$ Capacitor discharges



In case of analog-signal a capacitor is unable to hold or to store a charge $\Rightarrow$ electrons.

④ High Noise is produced during the processing of analog-signal

Eg of analog-signal is an audio-signal

Ⓐ → 'x'-frequency

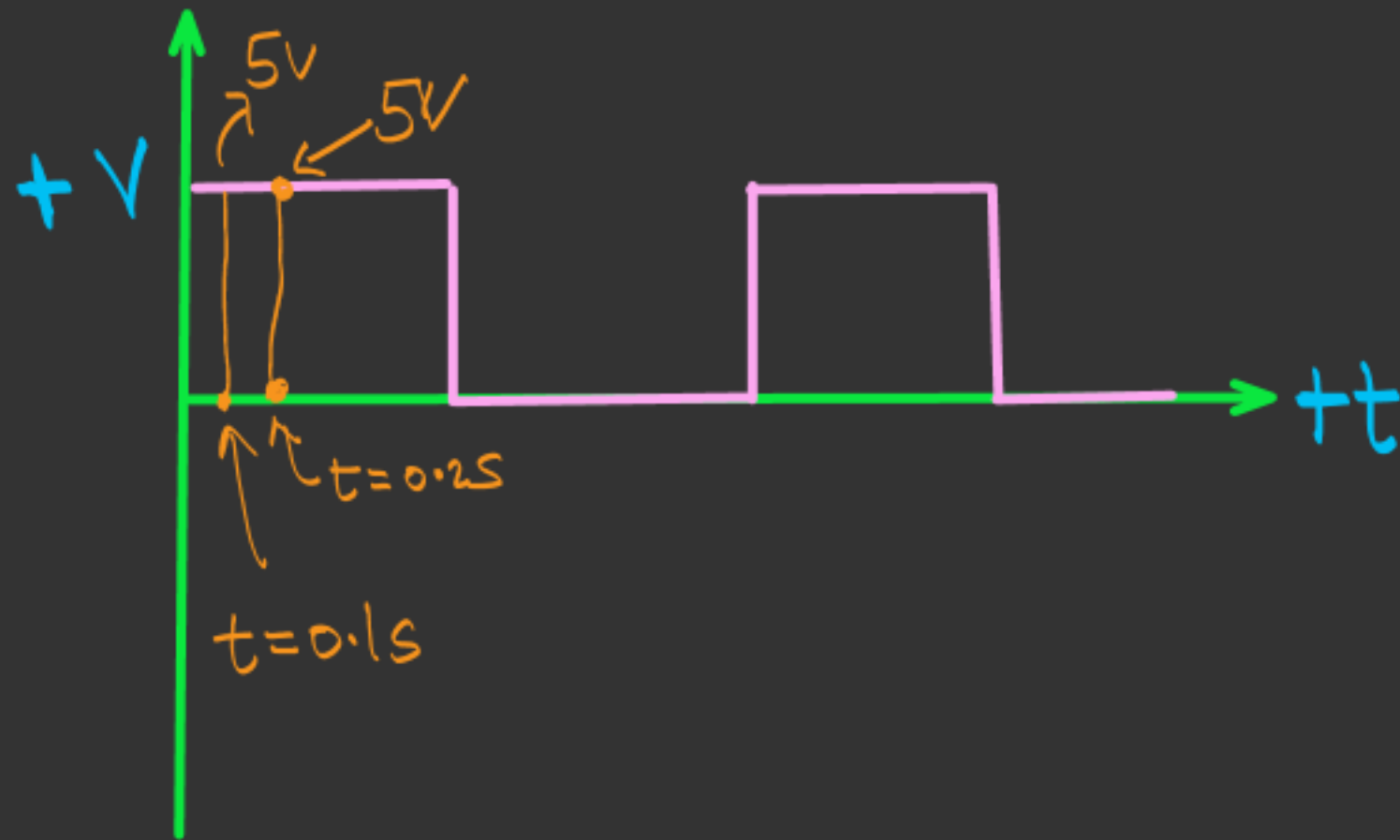
Ⓑ → 'y'-frequency

Ⓒ → 'z'-frequency

} Audio-signal is mixture of all these frequencies

⑤ Analog-Circuits are tough to design.

@ Digital Electronics

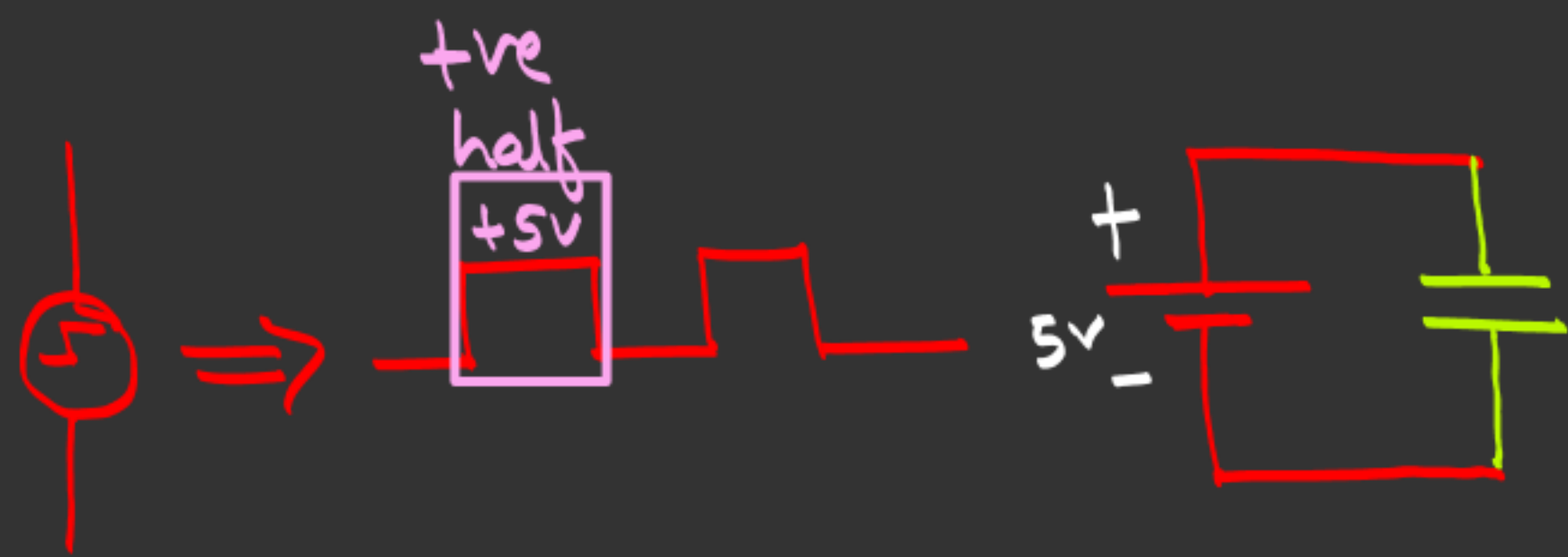


① The waveform is not continuous in nature

② Digital Electronics/circuit is used for processing digital signal.

③ Now, since the signal is able to achieve a stable value for certain time period

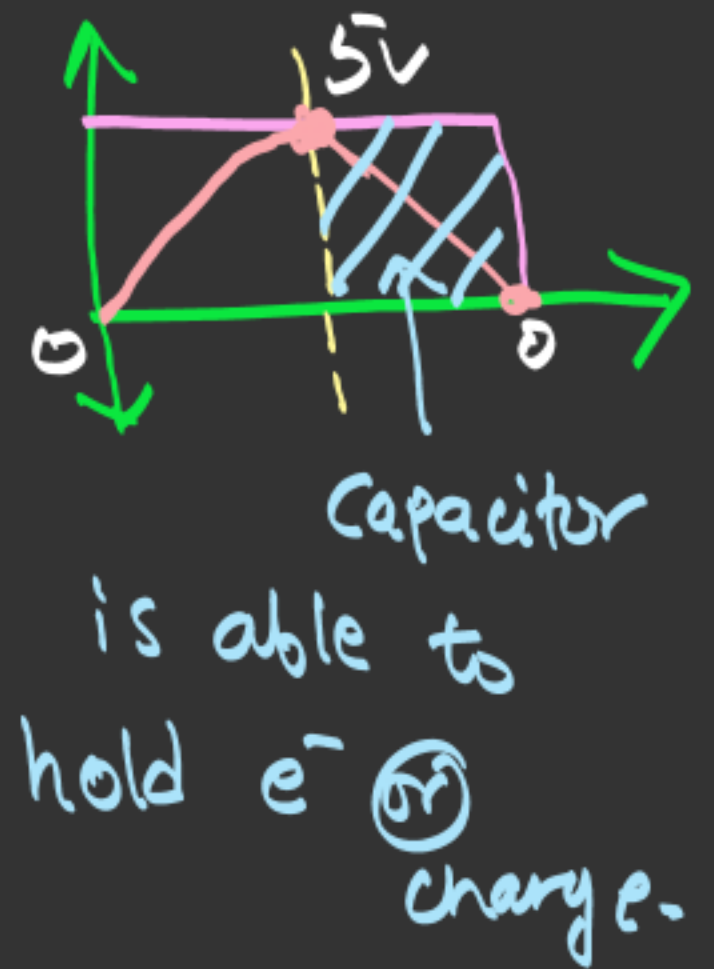
Therefore it can store such signal



0v to 5v $\Rightarrow$ Capacitor Charged

5v to 0v $\Rightarrow$ Capacitor charged

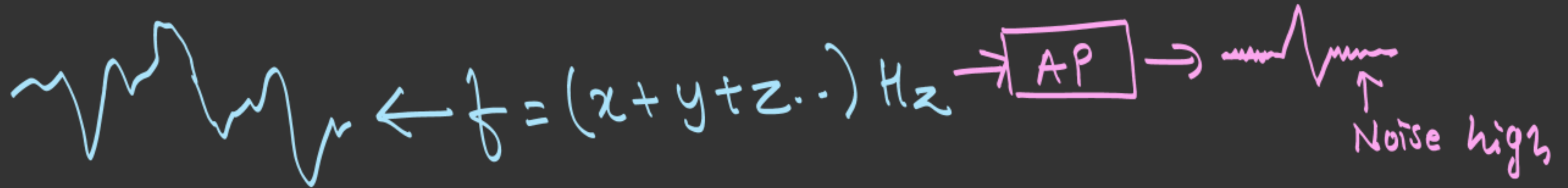
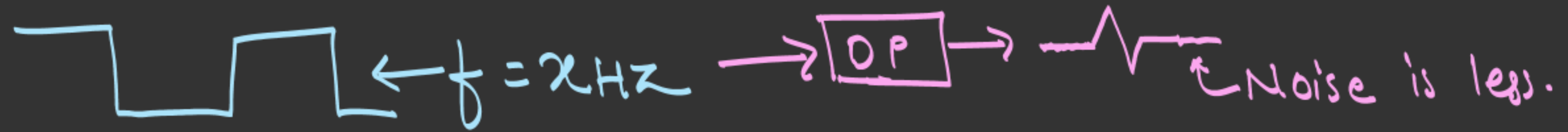
0v $\Rightarrow$ Discharging starts



In case of digital-signal a capacitor is able to hold a charge for few second.

$\Downarrow$
electrons $\Rightarrow$ information $\begin{cases} \rightarrow \text{images} \\ \rightarrow \text{videos} \end{cases}$

④ Less noise is produced during the processing of digital signal.



⑤ Easy to design